

CLAIMS

1. A cleaning solution for surface treatment operations in which metal impurity contamination becomes troublesome comprising an alkaline compound, hydrogen peroxide, water and 2,2-Bis-(hydroxyethyl)-(iminotris)-(hydroxymethyl)methan [Bis Tris] and/or nitrilotriacetic acid [NTA; CAS 139-13-9; Titrplex I] as chelating additive(s).
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2. A cleaning solution according to claim 1, characterised in that the alkaline compound is chosen from the group consisting of organic base, ammonia, ammonium hydroxide, tetramethyl ammonium hydroxide.
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3. A cleaning solution according to claim 1, characterised in that the alkaline compound is chosen from the group consisting of ammonia and ammonium hydroxide.
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4. A cleaning solution according to claims 1 to 3, comprising 2,2-Bis-(hydroxyethyl)-(iminotris)-(hydroxymethyl)methan [Bis Tris] in an amount in the range of 1000 to 3000 ppm.
5. A cleaning solution according to claims 1 to 3, comprising nitrilotriacetic acid [NTA; CAS 139-13-9; Titrplex I] in an amount in the range of 100 to 2000 ppm.
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6. A cleaning solution according to claims 1 to 3, comprising 2,2-Bis-(hydroxyethyl)-(iminotris)-(hydroxymethyl)methan [Bis Tris] and nitrilotriacetic acid [NTA; CAS 139-13-9; Titrplex I] in a total amount less than 4000 ppm.
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7. A cleaning solution according to claims 1 to 3, comprising 2,2-Bis-(hydroxyethyl)-(iminotris)-(hydroxymethyl)methan [Bis Tris] and nitrilotriacetic acid [NTA; CAS 139-13-9; Titrplex I] in a total amount less than 2000 ppm.
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8. A method for cleaning semiconductor substrate(s) comprising the step of treatment of the semiconductor substrate(s) with a cleaning solution according to one or more claims 1 to 7, and drying said semiconductor substrate(s) after water rinsing.
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9. A method of treatment according to claim 8, characterised in that the treatment with cleaning solution is carried out at a temperature the range of 20 to 80 °C.
- 5 10. A method of treatment according to claim 8, characterised in that the treatment with cleaning solution is carried out at normal room temperature.
- 10 11. A method of treatment according to claim 8, characterised in that cleaning solutions according to claims 1 to 7 are brought into contact with surfaces to be cleaned for a few seconds to 60 minutes.
12. A method of treatment according to claim 8, characterised in that cleaning solutions according to claims 1 to 7 are brought into contact with surfaces to be cleaned for about 15 seconds to 15 minutes.
- 15 13. A method for treatment of semiconductor substrate(s) according to claims 8 to 12, wherein the semi-conductor substrate(s) is (are) immersed / dipped in the cleaning solution (called dipping type cleaning).
- 20 14. Use of cleaning solutions according to claims 1 to 7 for for surface treatment operations including cleaning, etching, polishing, film-forming, for the cleaning of substrates such as semiconductor, metal, glass, ceramics, plastic, magnetic material, superconductors.

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